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CONTAINS NO CBI

VIA OVERNIGHT MAIL

April 1, 2005

Dear Sir/Madam:

This letter is submitted in reply to Mr. Mark W. Townsend's March 11, 2005 letter to Gerald Kennedy of DuPont. In that letter, Mr. Townsend asked why DuPont did not previously submit to EPA, under TSCA section 8(e), the four studies listed in his letter. In each case, many years ago EPA was aware of the information in the studies either because DuPont submitted the study to EPA or because the study results were published in the scientific literature. More specific details are provided in the attachment to this letter.

If you need more information, please contact me directly to discuss this matter further.

Very truly yours,

Andrea V. Malinowski

Attachment w/ enclosures (13 pages total)

CC: Mr. Mark Townsend, EPA (via e-mail)
Dr. Robert Rickard, DuPont

ATTACHMENT

Status of the reports referenced in Mr. Townsend's letter is as follows:

1. Haskell Lab Report No. 323-82

The results of this study were published in Toxicology Letters, 39 (1987) 295-300 (hereafter Toxicology Letters). A copy of Toxicology Letters is provided with this Attachment. Table 1 (21 day feeding) of Toxicology Letters provides the same results as are provided in the Results section of the Haskell Lab Report. This study, as published in Toxicology Letters, was referenced in the following abstract services: Biological Abstracts (BIOSIS), Chemical Abstracts Plus (CAPLUS), and Medline. A copy of each of these abstracts is provided with this Attachment.

As stated in EPA's "Statement of Interpretation and Enforcement Policy; Notification of Substantial Risk" (43 FR 11110, March 16, 1978) (hereafter the 1978 Policy Statement),

"Information need not be reported if it: ... Has been published in the scientific literature and referenced by the following abstract services: ... (2) Biological Abstracts, (3) Chemicals Abstracts, ... (5) Index Medicus ..."

EPA's TSCA Section 8(e) Reporting Guide (June 1991) (hereafter the 1991 Reporting Guide), which was in effect at the time of the Compliance Audit Program, confirms on page 8 thereof that EPA considers the Agency to be adequately informed of information that has been published in scientific literature. Specifically, page 8 of the 1991 Reporting Guide states

"There are several kinds of information about which the Agency considers itself to be adequately informed already for the purposes of Section 8(e) of TSCA. For example, information that otherwise meets the criteria for Section 8(e) need not be submitted if the information meets one of the following criteria: ... (2) is published in the open scientific literature ..."

As such, per EPA's 1978 Policy Statement and 1991 Reporting Guide, the study was not reportable since the results were published in the open scientific literature.

2. Haskell Lab Report No. 537-82

This report was submitted by DuPont to EPA as part of the Compliance Audit Program. It is report number 1196. Note that this report provides results of a feeding study using nondecafluorodecanoic acid, ammonium perfluorooctanoate, and a mixture of these two substances.

3. Haskell Lab Report No. 138-83

This report was submitted by DuPont to EPA as part of the Compliance Audit Program. It is report number 1197.

4. Haskell Lab Report No. 401-85

A summary of this study, including results, was provided to EPA by DuPont in year 2000 [see AR226-0574; pages 52-53 (typed); pages 53-54 (handwritten)].

In addition, Toxicology Letters, published in 1987, provides substantially the same information as is contained in this Haskell Lab Report. In Toxicology Letters, on page 298, results are reported for a 14 day feeding study of perfluorononanoate using male and female mice. Upon review, for purposes of answering EPA's letter, of the Toxicology Letters publication and the Haskell Lab study upon which the published results are based (primarily Haskell Lab Report No. 537-82), it appears that there was an error in Toxicology Letters concerning the identification of ammonium perfluorononanoate as the test substance. Based upon current knowledge, it is believed that the test substance should have been identified as nonadecafluorodecanoic acid. DuPont is still in the process of reviewing the facts and intends, as appropriate, to issue a correcting letter to Toxicology Letters.

Although perfluorononanoate may have been misidentified as the test substance, the publication nevertheless does report on a 14 day mouse feeding study using perfluorononanoate. Haskell Lab Report No. 401-85 similarly pertains to a 14 day feeding study of male and female mice using perfluorononanoate. As such, the route of exposure and the species are the same. The dose levels in the publication and Haskell Lab Report No. 401-85 overlap, with the Haskell Lab Report study including a lower dosage of 1 ppm and higher dosages of 1,000 ppm and 10,000 ppm.

In Toxicology Letters, the following results were reported:

- Increased absolute liver weight and liver-to-body weight ratios starting at 3 ppm
- Weight loss starting at 30 ppm
- Death starting at 300 ppm

In Haskell Lab No. 401-85, the following results were reported:

- Increased absolute liver weight and liver-to-body weight ratios starting at 3 ppm
- Weight loss starting at 100 ppm
- Death starting at 300 ppm

The key experimental results published in Toxicology Letters are the same as those observed in Haskell Lab Report No. 401-85 for doses of 3 ppm and higher. Under EPA's 1978 Policy Statement, information is not reportable if it "[i]s corroborative of well-

established adverse effects already documented in the scientific literature and referenced in [abstracting services such as Biological Abstracts or Chemical Abstracts.]" The dose level at which the effects in the Haskell Lab Report were observed were at the same or a higher dose level than were observed in Toxicology Letters. Effects occurring at higher doses than previously reported obviously are not new information that would trigger reporting obligations.

The Haskell Lab Report also reports that at a dose level of 1 ppm, the mean relative liver weights of male mice were significantly heavier than the controls using the LSD test, though the difference was not significant using Dunnett's Test. There was, however, no increase in absolute liver weight observed. Given that there was (1) an increase only in relative liver weight for male mice, significant by LSD but not by Dunnett's Test, (2) no increase in absolute liver weights for males or females, and (3) no supporting histopathological information because no histopathology was conducted, the information on mean relative liver weights is not considered biologically significant.

EPA has confirmed that such changes in organ weight do not by themselves trigger TSCA 8(e) reporting requirements. In guidance that the Agency issued in response to industry's request for further clarification on TSCA section 8(e) reporting triggers, which industry felt was necessary in order to assess what should be reported under the Compliance Audit Program, EPA states that

"If the observations made in repeated dose studies are limited to general, non-specific changes (e.g., changes in organ weights, biochemical/clinical chemistry parameters), such studies need not be reported under Section 8(e) unless other information exists ... that adds measurably to the overall interpretation of the significance of the changes. Pathological changes observed during the course of gross or microscopic tissue examinations need to be considered carefully in order to determine if those changes are oncogenic effects, reproductive/developmental effects, neurotoxicological effects or other organ-specific or organ system-specific effects indicative of serious or prolonged incapacitation." [April 2, 1992 letter to Robert M. Sussman, Latham and Watkins, from Victor J. Kimm, Deputy Assistant Administrator, Office of Prevention, Pesticides, and Toxic Substances (emphasis added)].

In summary, the mean relative liver weight change observed in the male mice is a change in organ weight, which EPA has stated is not reportable unless other information -- such as pathological changes observed from tissue examination -- exists that adds measurably to the overall interpretation of the significance of the organ weight change. In this study, there was also no tissue examination and as such, no pathological changes were observed. Even the weight change was not in absolute weight, only in mean relative liver weight. Therefore, since 1987 EPA has been adequately informed of the information in Haskell Lab No. 401-85.

Enclosures

- Toxicology Letters, 39 (1987) 295-300 (6 pages)
- Abstracts – Medline, CAPLUS, BIOSIS (3 pages)

Toxicology Letters, 39 (1987) 295–300
Elsevier

TXL 01898

INCREASE IN MOUSE LIVER WEIGHT FOLLOWING FEEDING OF AMMONIUM PERFLUOROOCTANOATE AND RELATED FLUOROCHEMICALS

(Ammonium perfluorooctanoate; ammonium perfluorononanoate; Telomer B ammonium sulfate; WG-III; liver weight, mouse)

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(Received 4 February 1987)
(Revision received 14 August 1987)
(Accepted 30 August 1987)

SUMMARY

The weight of the mouse liver following feeding of ammonium perfluorooctanoate, ammonium perfluorononanoate, Telomer B ammonium sulfate, and WG-III was increased in a dose-dependent manner. Dietary levels of 3 ppm or greater ammonium perfluorooctanoate for either 14 or 21 days produced a significant elevation in liver weight both on an absolute and on an organ/body weight ratio basis. Similarly, ammonium perfluorononanoate produced significant increases at the lowest level tested, 3 ppm. Telomer B ammonium sulfate and WG-III also produced liver weight increases but at higher feeding levels. The striking increase in liver weight following relatively short-term exposures in mice makes this a useful screening test for comparing the liver-enlarging capacity of ammonium perfluorooctanoate and related fluorochemicals.

INTRODUCTION

Ammonium perfluorooctanoate (CAS Registry No. 3825-26-1) has been shown to produce a number of responses in the rat following both dermal [1] and inhalation [2] exposures. Rats fed from 30 to 3000 ppm for 28 days showed an increase in liver weights along with histopathologic changes consisting primarily of hepatocytic hypertrophy in the cytoplasm [3]. The hypertrophy was centrilobular to midzonal and was accompanied by degeneration and necrosis of scattered liver cells. The severity and degree of tissue reaction were somewhat more pronounced in males. The same authors [3] showed that 28 days of feeding 30 or 100 ppm to mice produc-

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ed marked increases in liver weight. Within animal species, marked differences in metabolism of this chemical have been observed. In the rat, excretion via the urine occurs rapidly in the female and much less rapidly in the male [3]. An active secreting mechanism functioning in the kidneys appears responsible, with male rats having the systems absent or relatively inactive [4]. Work in our laboratories (unpublished) has shown that the mouse excretes ammonium perfluorooctanoate less rapidly than does the rat and that the profiles are similar for both the male and the female. In man, increased concentrations of organic fluorine in the blood of workers exposed to ammonium perfluorooctanoate were detected and relatively long clearance times were reported [5].

Because of the uncertainties associated with use of ammonium perfluorooctanoate, especially due to the apparent long residence time in the blood of man, a number of chemicals were suggested as possible replacement candidates. Since the mouse excretes ammonium perfluorooctanoate slowly, the biological response in this species might be reflective of that in man. Further, the rapid increase in liver weight seen in preliminary studies with the chemical suggests that the increase in mouse liver weight could be considered as a possible screening test to compare the capacity of structurally similar chemicals to produce this effect.

MATERIALS AND METHODS

The 4 chemicals were prepared as 99% pure by the synthesis laboratories of the Du Pont Company. The chemicals tested were: (1) ammonium perfluorooctanoate (octanoic acid, pentadecafluoro-, ammonium salt, CAS Reg. No. 3825-26-1); (2) ammonium perfluorononanoate (nonanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-hexadecafluoro-, ammonium salt, CAS Reg. No. 4149-60-4); (3) Telomer B ammonium sulfate (poly(difluoromethylene), alpha-fluoro-omega-[2-(sulfoxy)ethyl]-, ammonium salt, CAS Reg. No. 80010-35-1); and (4) WG-III (propanoic acid, 2-[2-[2-(aminosulfonyl)]-1,1,2,2-tetrafluoropropoxy]-2,3,3,3-tetrafluoro-, ammonium salt, CAS Reg. No. 4089-61-6).

Male and female Crl:CD-1 mice between 40 and 45 days of age and weighing between 20 and 38 g (Charles River Breeding Laboratories, North Wilmington, MA) were used in these studies. Mice were housed in groups of 5 each in suspended, stainless-steel wire-mesh cages and fed Purina Laboratory Chow (Ralston Purina, St. Louis, MO) and water ad libitum. Test groups were formed to include 5 mice per sex such that the group mean body weights were similar. Food consumption was not measured.

In the first experiment, ammonium perfluorooctanoate was added to the diet at concentrations of 0 (control), 30, 300, and 3000 ppm. Mice were fed for 14 days with daily observations made for unusual reactions. Body weights were obtained weekly. At the end of the 14-day feeding period, the mice were sacrificed by chloroform overdose and the liver weights were obtained. No histologic examinations were performed. Body weights

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RESULTS

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TABLE 1

LIVER WEIGHTS OF MICE

Dietary level (ppm)	Number of feeding days
0	14
0	21
0.01	21
0.03	21
0.1	21
0.3	21
1	21
3	21
10	21
30	14
	21
300	14
3000	14

[a] All mice died prior to the

[b] Different from control, $P <$

formed. Body weights and liver weight data were evaluated by analysis of variance at the 0.05 level of significance. When the F ratio indicated a difference among means, the least-significant difference test was used to compare treated groups to control [6].

The second experiment was conducted in an identical manner with dietary feeding levels of 0 (control), 0.01, 0.03, 0.1, 0.3, 1, 3, 10, and 30 ppm. In this experiment feeding was continued for 21 consecutive days to enhance the potential sensitivity of the test system by allowing an additional 7 days of exposure.

To compare the capability of the 4 materials to enlarge the mouse liver, ammonium perfluorononanoate, Telomer B ammonium sulfate, and WG-III were each then tested by feeding concentrations of either 30, 300, or 3000 ppm for 14 consecutive days. Each chemical was tested with its own control group. For ammonium perfluorononanoate, 2 additional groups, 3 and 10 ppm, were tested.

RESULTS

Ammonium perfluorooctanoate produced marked elevations in liver weights of mice fed 3 ppm or greater (Table I). This was apparent when either liver weights

TABLE I

LIVER WEIGHTS OF MICE FED AMMONIUM PERFLUOROOCTANOATE

Dietary level (ppm)	Number of feeding days	Mean liver weight (g)		Mean liver/body weight (g/100 g)	
		Males	Females	Males	Females
0	14	1.76	1.31	5.1	5.0
0	21	1.82	1.40	5.4	5.2
0.01	21	2.07	1.19	5.8	4.5
0.03	21	1.91	1.37	5.9	5.0
0.1	21	1.82	1.20	5.2	4.4
0.3	21	1.83	1.37	5.3	5.0
1	21	1.89	1.46	5.8	5.3
3	21	2.45*	1.85*	7.1*	6.7*
10	21	2.87*	2.34	8.7*	9.0*
30	14	4.06*	3.35*	12.3*	12.4*
	21	4.61*	3.44*	13.9*	13.3*
300	14	4.16*	2.98*	17.3*	16.6*
3000	14	—[a]	—[a]	—[a]	—[a]

[a] All mice died prior to the end of the test.

* Different from control, $P < 0.05$.

or liver-to-body weight ratios were evaluated. Body weights of mice fed up to 30 ppm were not different from those of the controls and no unusual clinical signs were seen in these mice. Body weight loss was seen at 300 ppm and 1 of 5 female and 0 of 5 males died. None of the mice fed 3000 ppm survived the 14-day feeding period.

The results from mice fed ammonium perfluorononanoate were similar (Table II). At all feeding levels tested (3–30 ppm) liver weights and liver-to-body weight ratios were elevated. Mice fed 3 or 10 ppm showed no usual signs of response to ammonium perfluorononanoate. Weight loss and generalized weakness were observed in mice fed 30 ppm. All mice fed 300 and 3000 ppm died prior to the end of the test period.

Liver weights of mice fed Telomer B ammonium sulfate were larger than those of the controls at all feeding levels (30–3000 ppm) tested. No outward clinical signs of a response were seen at 30 ppm, mice fed 300 ppm gained less weight during the

TABLE 2

LIVER WEIGHTS OF MICE FED FLUOROCHEMICALS RELATED TO AMMONIUM PERFLUOROOCTANOATE

Dietary level (ppm)	Mean liver weight (g)		Mean liver/body weight (g/100 g)	
	Males	Females	Males	Females
Ammonium perfluorononanoate				
0	1.77	1.37	5.4	5.7
0	2.08	1.61	6.0	5.7
3	3.01	2.29	8.4	7.7
10	4.01	3.41	13.7	13.7
30	5.14	4.18	17.1	16.7
300	4.19	5.11	19.0	25.5
3000	–[a]	–[a]	–[a]	–[a]
Telomer B ammonium sulfate				
0	1.84	1.40	5.8	5.8
30	2.15	2.68	10.7	11.2
300	3.63	2.54	11.2	10.6
3000	5.16	3.21	16.1	16.0
WG-III				
0	1.84	1.44	5.2	5.5
30	2.15[b]	1.66[b]	6.5	6.4
300	3.63	2.53	9.8	10.1
3000	5.16	4.20	19.1	18.3

[a] All mice died prior to the end of the test.

[b] Not significantly different from controls, $P > 0.05$ (all other test values are significantly different).

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2 of 5 males was seen at
With WG-III, liver weig
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DISCUSSION

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pm gained less weight during the

ELATED TO AMMONIUM

Mean liver/body weight (g/100 g)	
Males	Females
5.4	5.7
6.0	5.7
8.4	7.7
3.7	13.7
7.1	16.7
9.0	25.5
a	–b
5.8	5.8
0.7	11.2
1.2	10.6
6.1	16.0
5.2	5.5
6.5	6.4
9.8	10.1
9.1	18.3

t test values are significantly different).

feeding period than did the controls, and body weight loss along with the death of 2 of 5 males was seen at 3000 ppm.

With WG-III, liver weights from all feeding levels (30–3000 ppm) were elevated with the response readily apparent in mice fed either 300 or 3000 ppm. No outward signs of untoward response were seen at 30 ppm, a reduction in the rate of body weight gain was seen at 300 ppm, and 1 of 5 female mice fed 3000 ppm died with weight loss observed in the surviving mice.

DISCUSSION

The ability of ammonium perfluorooctanoate to produce rapid increase in liver weight in a dose-related fashion has allowed estimation of the relative biologic activity of the chemical over a wide range of exposure conditions. Our previous work with ammonium perfluorooctanoate in the rat has shown that the first signs of a response to the agent occur in the liver [1,2]. Differences in the disposition of ammonium perfluorooctanoate probably are responsible for the differing response seen between male and female rats [4]. Rats excrete the chemical in the urine rather rapidly whereas mice do not (unpublished results). The greater sensitivity of the male compared to the female rat to ammonium perfluorooctanoate is not seen in the mouse. While the retention of this chemical in the blood of mice over time has not been studied, the slower excretion suggests that the residence time in the body is longer than in the rat. Increased organic fluorine concentrations in blood of workers exposed to ammonium perfluorooctanoate and relatively long clearance times have been observed [5].

Mice fed 1 ppm ammonium perfluorooctanoate for 14 days show no increase in liver weight or in the liver-to-body weight ratio. Dietary levels of 3 ppm or greater produce increases in a dose-related fashion. Mortality occurred in mice fed 3000 ppm. Ammonium perfluorononanoate led to death of mice at feeding concentrations of 300 ppm and liver weight increases at the lowest level tested, 3 ppm. This material appears to be more toxic than ammonium perfluorooctanoate and the liver weight response, in terms of both dose required to produce the change and the magnitude of the liver weight increase, is similar.

The 2 other fluorinated chemicals tested, Telomer B ammonium sulfate and WG-III, also produced liver weight increases in the mouse but the dietary level required to produce the response (30 ppm) was greater and the magnitude of the change (weight of 1.66–2.68 g vs. 3.35–5.14 g for the other perfluorinated materials) was considerably less. Mice fed 300 ppm survived the entire feeding period with most mice fed 3000 ppm surviving (in contrast to that seen with the perfluorinated chemicals). It is concluded that the increase in liver weight of mice fed Telomer B ammonium sulfate or WG-III is less than that seen following feeding of equivalent amounts of either ammonium perfluorooctanoate or ammonium perfluorononanoate.

It is thus possible to use the increase in relative weight of the mouse liver to estimate the relative capability of a series of high molecular weight fluorochemicals to produce this change. It needs also to be pointed out that the relative hazards involved in the use of these materials can only be determined after more complete toxicologic profiles are developed and the particular end-uses of the materials are considered.

The intent of this communication is neither to describe in detail the altered morphology of the liver nor to suggest biologic mechanism(s) of action. Rather, we present a practical means to compare a group of chemically similar materials as to their ability to produce a biologic response — liver weight increase.

REFERENCES

1 G.L. Kennedy, Jr., Dermal toxicity of ammonium perfluorooctanoate, Toxicol. Appl. Pharmacol., 81 (1985) 348–355.
2 G.L. Kennedy, Jr., G.T. Hall, M.R. Brittelli, J.R. Barnes and H.C. Chen, Inhalation toxicity of ammonium perfluorooctanoate, Food Chem. Toxicol., 24 (1987) 1325–1330.
3 F.D. Griffith and J.E. Long, Animal toxicity studies with ammonium perfluorooctanoate, Am. Ind. Hyg. Assoc. J., 41 (1980) 576–581.
4 H. Hanhijarvi, R.H. Opbaug and L. Singer, The sex-related difference in perfluorooctanoate excretion in the rat, Proc. Soc. Exp. Biol. Med., 171 (1982) 51–55.
5 F.S. Ubel, S.D. Sorenson and D.E. Roach, Health status of plant workers exposed to fluorochemicals: a preliminary report, Am. Ind. Hyg. Assoc. J., 41 (1980) 584–589.
6 B.W. Snedecor and W.G. Cochran, Statistical Methods, 7th edn., Iowa State University Press, Ames, IA, 1980, pp. 141–148.

Toxicology Letters, 39 (1987) 3
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DETECTION OF THE
CELLS USING A RAPI

(Trichothecene; MTT; te

PETER S. HOLT, SANDRA E

United States Department of Ag
tomology Research Laboratory

(Received 25 June 1987)
(Revision received 14 August 1
(Accepted 30 August 1987)

SUMMARY

A colorimetric method of de
on the ability of mitochondrial
(MTT) into a colored formazan
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The toxin dose which inhibits
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also works well with mitogen-st
sensitive response to T-2 effects
form and gives a high degree of
ly in use.

Address for correspondence: D
TX 77841, U.S.A.

Abbreviations: CHO-K1, Chin
Eagle's medium; DMSO, dim
[^{3}H]TdR, tritiated thymidine;
phosphate-buffered saline; E
munosorbent assay.

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OWN - NLM
STAT- MEDLINE
DA - 19880121
DCOM- 19880121
LR - 20041117
PUBM- Print
IS - 0378-4274
VI - 39
IP - 2-3
DP - 1987 Dec
TI - Increase in mouse liver weight following feeding of ammonium perfluorooctanoate and related fluorochemicals.
PG - 295-300
AB - The weight of the mouse liver following feeding of ammonium perfluorooctanoate, ammonium perfluorononanoate, Telomer B ammonium sulfate, and WG-III was increased in a dose-dependent manner. Dietary levels of 3 ppm or greater ammonium perfluorooctanoate for either 14 or 21 days produced a significant elevation in liver weight both on an absolute and on an organ/body weight ratio basis. Similarly, ammonium perfluorononanoate produced significant increases at the lowest level tested, 3 ppm. Telomer B ammonium sulfate and WG-III also produced liver weight increases but at higher feeding levels. The striking increase in liver weight following relatively short-term exposures in mice makes this a useful screening test for comparing the liver-enlarging capacity of ammonium perfluorooctanoate and related fluorochemicals.
AD - Central Research and Development Department, E.I. du Pont de Nemours and Company, Haskell Laboratory for Toxicology and Industrial, Newark, DE 19714.
FAU - Kennedy, G L Jr
AU - Kennedy GL Jr
LA - eng
PT - Journal Article
PL - NETHERLANDS
TA - Toxicol Lett
JID - 7709027
RN - 0 (Caprylates)
RN - 0 (Fluorocarbons)
RN - 0 (Octanoic Acids)
RN - 335-67-1 (perfluorooctanoic acid)
SB - IM
MH - Animals
MH - Body Weight/drug effects
MH - Caprylates/*toxicity
MH - Dose-Response Relationship, Drug
MH - Female
MH - Fluorocarbons/*toxicity
MH - Liver/*drug effects/pathology
MH - Male
MH - Mice
MH - Octanoic Acids/*toxicity
MH - Organ Size/drug effects
EDAT- 1987/12/01
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SO - Toxicol Lett 1987 Dec;39(2-3):295-300.

L2 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2005 ACS on STN
AN 1988:33248 CAPLUS
DN 108:33248
TI **Increase** in **mouse liver weight** following **feeding** of ammonium **perfluorooctanoate** and related **fluorochemicals**
AU Kennedy, Gerald L., Jr.
CS Cent. Res. Dev. Dep., E.I. du Pont de Nemours Co., Newark, DE, 19714, USA
SO Toxicology Letters (1987), 39(2-3), 295-300
CODEN: TOLED5; ISSN: 0378-4274
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LA English

The following information was generated from the Toxicology Bibliographic Information (TOXLINE), a database of the National Library of Medicine's TOXNET system (http://toxnet.nlm.nih.gov) on March 14, 2005.

Query: Singular and plural forms were searched.

1
TITLE:
INCREASE IN MOUSE LIVER WEIGHT FOLLOWING FEEDING OF AMMONIUM PERFLUOROOCTANOATE AND RELATED FLUOROCHEMICALS

AUTHORS:
KENNEDY G L JR

SOURCE:
TOXICOL LETT (AMST); 39 (2-3). 1987. 295-300.

ABSTRACT: BIOSIS COPYRIGHT: BIOL ABS. RRM

MEDICAL SUBJECT HEADINGS (MESH):
BIOCHEMISTRY
DIGESTIVE SYSTEM DISEASES/PATHOLOGY
DIGESTIVE SYSTEM/PATHOLOGY
POISONING
ANIMALS, LABORATORY
ENVIRONMENTAL POLLUTANTS/POISONING
OCCUPATIONAL DISEASES
MURIDAE

KEYWORDS:
Biochemical Studies-General
Digestive System-Pathology
Toxicology-General
Toxicology-Environmental and Industrial Toxicology
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